

Application No. 10/707,543
Docket No. 125470
Amendment dated August 4, 2005
Reply to Office Action of May 5, 2005

Amendments to the Specification:

Please replace paragraph [0003] with the following amended paragraph:

[0003] Environmental coatings and TBC bond coats are often formed of an oxidation-resistant aluminum-containing alloy or intermetallic. An example of the former is MCrAlX (where M is iron, cobalt and/or nickel, and X is yttrium or another rare earth element), which is deposited as an overlay coating. An example of the latter includes diffusion coatings, particularly ~~particular~~ diffusion aluminides and platinum-aluminides (PtAl) that contain aluminum intermetallics (e.g., NiAl and PtAl). Other types of environmental coatings and bond coats that have been proposed include beta-phase nickel aluminide (NiAl) overlay coatings. In contrast to the aforementioned MCrAlX overlay coatings, which are metallic solid solutions containing intermetallic phases, the NiAl beta phase is an intermetallic compound that exists for nickel-aluminum compositions containing about 30 to about 60 atomic percent aluminum. Notable examples of beta-phase NiAl coating materials are disclosed in commonly-assigned U.S. Patent Nos. 5,975,852 to Nagaraj et al., 6,153,313 to Rigney et al., 6,255,001 to Darolia, and 6,291,084 to Darolia et al.

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These NiAl compositions, which preferably contain a reactive element (such as zirconium and/or hafnium) and/or other alloying constituents (such as chromium), have been shown to improve the adhesion of a ceramic TBC, thereby increasing the spallation resistance of the TBC. These same compositions can also be used alone as environmental coatings for superalloy components that do not require the thermal protection of a TBC.